

PARK ET AL. - 09/849,345
Client/Matter: 070120-0279468

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. Cancelled.
2. Cancelled.
3. Cancelled.
4. Cancelled.
5. Cancelled.

6. (Currently Amended) Liquid treatment equipment, comprising:

a first contact coming into electrical contact with a metal layer of a substrate being treated thereon the metal layer is formed at an approximate center of the substrate being treated;

a housing that accommodates the first contact and prevents an electrolyte from intruding inside the housing when the first contact comes into electrical contact with the metal layer;

a power supply portion, disposed connected through a lead wire to the contact, that supplies power of a negative side or positive side from the first contact to the substrate being treated in electrical contact with the first contact; and

an electrode, disposed connected through a lead wire to the power supply portion, that supplies/recovers an electric current that flows, due to the power supply, in the ~~an~~ electrolyte in contact with the metal layer through the metal layer.

7. (Original) The liquid treatment equipment as set forth in claim 6, further comprising:

a second contact coming into electrical contact, at a periphery of the substrate being treated, with the metal layer of the substrate being treated;

wherein the second contact is connected to the power supply portion.

8. (Original) The liquid treatment equipment as set forth in claim 6, further comprising:

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a second contact coming into electrical contact, at a periphery of the substrate being treated, with the metal layer of the substrate being treated;

a second power supply portion, disposed connected through a lead wire to the second contact, that supplies power of a negative side or positive side from the second contact to the substrate being treated in electrical contact with the second contact; and

a power supply controller, disposed connected to the power supply portion and the second power supply portion, that controls power supplies of the power supply portion and the second power supply portion to increase and decrease alternately.

9. (Original) The liquid treatment equipment as set forth in claim 6, further comprising:

a second contact coming into electrical contact, at a periphery of the substrate being treated, with the metal layer of the substrate being treated;

a second power supply portion, disposed connected through a lead wire to the second contact, that supplies power of a negative side or positive side from the second contact to the substrate being treated in electrical contact with the second contact; and

a power supply controller, disposed connected to the power supply portion and the second power supply portion, that controls power supplies of the power supply portion and the second power supply portion to be implemented alternately.

10. (Original) The liquid treatment equipment as set forth in claim 6, further comprising:

a second contact coming into electrical contact, at a periphery of the substrate being treated, with the metal layer of the substrate being treated;

a second power supply portion, disposed connected through a lead wire to the second contact, that supplies power of a negative side or positive side from the second contact to the substrate being treated in electrical contact with the second contact; and

a power supply controller, disposed connected to the power supply portion and the second power supply portion, that controls a ratio of power supplies of the power supply portion and the second power supply portion to be constant.

11. (Currently Amended) A liquid treatment method in which by applying a voltage between an electrode disposed in contact with a treatment solution accommodated in a liquid

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treatment bath and a substrate being treated having a metal layer, the substrate being treated is liquid treated, the method comprising the steps of:

coming into electrical contact, due to a first contact member, with the metal layer of the substrate being treated at an approximate center of the substrate being treated;

preventing the treatment solution from intruding inside a housing that accommodates the first contact member; and

supplying power of a negative side or positive side from the first contact member to the substrate being treated in electrical contact with the first contact member.

12. (Currently Amended) A The liquid treatment method in which by applying a voltage between an electrode disposed in contact with a treatment solution accommodated in a liquid treatment bath and a substrate being treated having a metal layer, the substrate being treated is liquid treated as set forth in claim 11, the method further comprising the steps of:

coming into electrical contact, due to a first contact member, with the metal layer of the substrate being treated at an approximate center of the substrate being treated;

supplying power of a negative side or positive side from the first contact member to the substrate being treated in electrical contact with the first contact member;

coming into electrical contact, due to a second contact member, with the metal layer of the substrate being treated at a periphery portion of the substrate being treated; and

supplying power of a negative side or positive side from the second contact member to the substrate being treated in electrical contact with the second contact member;

wherein power supplies from the first contact member and the second contact member are controlled to increase and decrease alternately.

13. (Currently Amended) A The liquid treatment method in which by applying a voltage between an electrode disposed in contact with a treatment solution accommodated in a liquid treatment bath and a substrate being treated having a metal layer, the substrate being treated is liquid treated as set forth in claim 11, the method further comprising the steps of:

coming into electrical contact, due to a first contact member, with the metal layer of the substrate being treated at an approximate center of the substrate being treated;

supplying power of a negative side or positive side from the first contact member to the substrate being treated in electrical contact with the first contact member;

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coming into electrical contact, due to a second contact member, with the metal layer of the substrate being treated at a periphery portion of the substrate being treated; and

supplying power of a negative side or positive side from the second contact member to the substrate being treated in electrical contact with the second contact member;

wherein power supplies from the first contact member and the second contact member are controlled to be implemented alternately.

14. (Currently Amended) The liquid treatment method as set forth in claim 11, further comprising the steps of:

coming into electrical contact, due to a second contact member, with the metal layer of the substrate being treated at a periphery of the substrate being treated; and

supplying power of a negative side or positive side from the second contact member to the substrate being treated in electrical contact with the second contact member;

wherein a ratio of power supplies from the first contact member and the second contact member are controlled to be constant.

15. (Withdrawn) Liquid treatment equipment, comprising:

a plurality of needle bodies coming into electrical contact with a metal layer of a substrate being treated thereon the metal layer is formed;

a power supply portion, disposed connected through a lead wire to the needle body, that supplies electricity from the needle body to the substrate being treated in electrical contact with the needle body; and

an electrode, disposed connected through a lead wire to the power supply portion, that recovers an electric current flowing, due to the power supply, in an electrolyte in contact with the metal layer through the metal layer.

16. (Withdrawn) The liquid treatment equipment as set forth in claim 15, further comprising:

a pressure detection portion, disposed to the needle body, that detects a pressure when the needle body comes into contact with the metal layer; and

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a movable portion, disposed to the needle body, that moves the needle body in a direction approximately vertical to the substrate surface being treated to maintain the detected pressure constant.

17. (Withdrawn) A liquid treatment method comprising the steps of:

coming into electrical contact, due to a plurality of needle bodies, with a metal layer of a substrate being treated thereon the metal layer is formed;

supplying electricity from the needle body to the substrate being treated in electrical contact;

sending supplied electricity through the metal layer in an electrolyte in contact with the metal layer; and

recovering, from an electrode disposed in the electrolyte, the electricity sent in the electrolyte.

18. (Withdrawn) The liquid treatment method as set forth in claim 17: wherein the step of coming into electrical contact, due to a plurality of needle bodies, with a metal layer of the substrate being treated thereon the metal layer is formed is implemented by detecting a pressure when the needle body comes into contact with the metal layer and moving the needle body in a direction approximately vertical to the substrate surface being treated to maintain the detected pressure constant.